

Personality Prediction using Logistic Regression

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ABSTRACT

Human personality has played a significant role in the growth of both individuals and organisations. Using standard questionnaires or reviewing the curriculum vitae are two ways to assess human personality (CV). Recruiters used to manually shortlist/filter a candidate's CV based on their criteria. We present a framework in this paper that automates the eligibility review of candidates during the recruitment process. Based on the uploaded CV, the system evaluates professional eligibility. The framework employs the TF-IDF Algorithm for machine learning. Furthermore, by reviewing the scores obtained in various fields, the resulting scores aid in determining the qualities of the candidates. The use of graphs to analyse a candidate's success makes it easier to assess his or her personality and aids in proper CV analysis. As a result, the framework lends a hand in the recruitment process, allowing the candidate's CV to be shortlisted and a reasonable decision to be reached.

KEYWORDS: *Personality Evaluation, Big five model of Personality, Machine learning, Curriculum Vitae Analysis*

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I. INTRODUCTION

In terms of jobs, choosing the best candidate for the job from a large pool of applicants has long been a challenge [1]. Traditional methods include administering personality and professional eligibility assessment assessments, conducting interviews, and holding group discussions. Employees' web handles are now exposed to even more relevant information about them as a result of the introduction of social media [2]. Recruiters, on the whole, are uninterested in such detail. Traditional recruiting strategies include an aptitude test followed by an interview. Traditional methods are time-consuming, and they can lead to unequal candidate selections. The most important aspect that represents an individual is personality, which changes over time [3]. Dealing with them is a time-consuming process, so we devised a method for identifying personalities and making recommendations [4].

Kessler et al. [5] suggested a method that distinguishes and categorises candidates based on their importance by analysing unstructured text documents (job offers). Pasquale De Meo [6] proposes another XML-based multi-agent recommender framework that relies on rich user profiles for support. The proposed system was a multi-agent recommender system that exploited user profiles via XML to improve recruitment services in a personalised manner. Another method proposed by Mohammad Mehrad Sadra et al. employs NLP for resume standardisation using a modelling language approach [7]. Despite their widespread use, these techniques have flaws in terms of structure, inconsistent CV formats, and contextual details [8].

II. LITERATURE SURVEY

The interrelationships among the Big Five personality factors (Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism) were examined in this paper according to Liden et al. [9]

Psychometric analysis is used to choose the best candidate based on the results of psychometric tests and the needs of the company [8]. Using the Alberta Context Tool survey results, protocols for psychometric analysis were proposed.

The **Big Five Personality Model** (also known as the Five Factor Model) was used to predict the candidate's personality, which involves Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism [10].

The CV was analysed using recommendation based on machine learning techniques. Various assessment methods have been used in the literature [4]. One method has been described in which a tool called "Career Mapper" is used to make CV recommendations. It verifies that the user profile is complete.

The use of different filters is normally involved in the recommendation. Among them are content and collaboration. Usage of Fo-DRA for content-based suggestions is one of the alternatives to **Content-Based Recommender** [1]. The similarities among users are a key feature of **Collaborative Based Recommender** [11-13].

According to Liden et al., the interrelationships among the Big Five personality factors (Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism) were

explored in this paper to test for the existence of a GFP. It is also worth noting that the inclusion of a GFP did not mean that other personality variables lower in the hierarchy lost value[9].

III. PROPOSED SYSTEM

IV. PROPOSED STATEMENT

We list some of the limitations based on the survey mentioned above.

1. Traditional methods of hiring typically include job seekers completing physical resumes and performing interviews. But, with the recent increase of applications, the number of candidates continues to overwhelm employers. Machine learning algorithms are used to create the models that will be tested in the proposed automated candidate grading system.
2. In recent years, the value of manual interviews and resumes in human resources has increased. It is important to devise a solution that will reduce or expedite the workload of the HR department.

V. SOLUTION

The proposed framework would have a transparent method, allowing for a more efficient way to short list submitted candidate CVs from a large number of applicants. In our paper, we propose a machine learning algorithm for personality assessment and CV analysis. This method offers an expert workforce for the company, assisting the HR department in selecting the best applicant for the specific job profile. Knowledge is highly valued in our culture. You have a better chance of achieving in school and in life if you have a high IQ. Psychometric questions are often used to predict personality.

The Candidate have to fill a form with all details and they have to rate themselves in terms of Openness, Neuroticism, Conscientiousness, Agreeableness, Extraversion based on which the system predicts their personality.

Questions	Openness	Conscientiousness	Extraversion	Agreeableness	Neuroticism
I feel little concern for others	-Select- Agree Disagree Strongly Agree Strongly Disagree Neither agree/disagree	Agreed	Agreed	Strongly Agreed	Disagrees
I am very prepared	-do-	-do-	-do-	-do-	-do-
I get stressed out very easily	-do-	-do-	-do-	-do-	-do-
I like multitasking	-do-	-do-	-do-	-do-	-do-
I never get demotivated easily	-do-	-do-	-do-	-do-	-do-

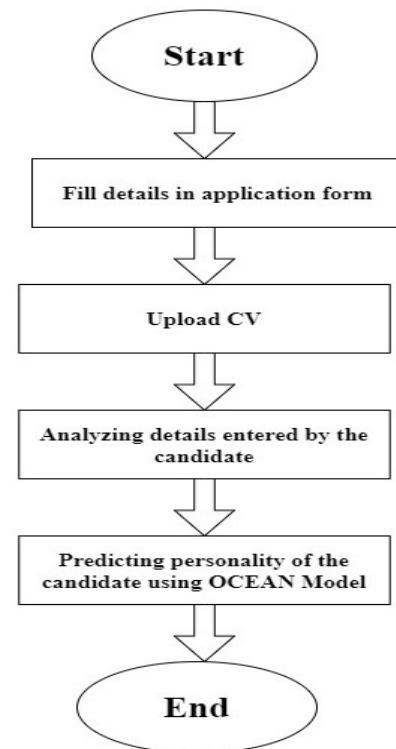


Fig 1: Implementation Steps

VI. WORKING OF THE SYSTEM

1. train_model class: It includes two methods for training the model and predicting the outcome by providing different values. a. train technique: It reads a csv file with the dataset for training the algorithm and builds a model using Logistic Regression. For training the model, it employs a variety of 7 values.

A. train method: It reads a csv file with the dataset for training the algorithm and builds a model using Logistic Regression. For training the model, it employs a variety of 7 values.

B. test method: It predicts a person's personality by passing an array of values containing gender, age, and the other five personality characteristics.

2. main method: We begin by creating an object of the train model class and then train the model by invoking the class's train method. Then we initialize a variable with a Tk object and design the system's landing page with labels and a press. A button called Predict Personality is developed, which invokes the predict person process.

3. predict_person method: We close the root tkinter window and build a new top level window with the appropriate size and attributes. The window's heading is labelled, followed by different labels and their entries. To choose a resume file, the user must press the Choose File button, which then calls the Open file process, which requires a button argument. Various entries are used in the predict person system to predict the personality. When you press the Submit button, all of the values are passed to prediction result.

4. Open File method: It tries to open the directory with the default address, name, and file types, but fails if no file is selected. After the try except block, the method replaces the name of the choose file button in the predict person method with the base name of the file so that the user is aware of the selected file.

5. prediction_result method: This method begins by closing the previous tkinter window that was used to collect data from the user. Following that, it invokes the model object's test method and stores the result returned by the method. Following that, it parses all of the information from the resume and stores it in a variable, followed by a try except block that attempts to delete the name and validate the mobile number from the information retrieved from the resume. The data sent by the user is then printed on the console. Following that, the method displays a full-screen window with all of the parsed information and expected personality on the GUI window, as well as the description of each personality trait

6. check_type method: It transforms strings and numbers into the desired format, as well as lists and tuples in string.

VII. THE BIG FIVE PERSONALITY MODEL

Individual personality traits are expressed in how people view themselves on social networking sites. The Five-Factor Model (FFM) uses such knowledge to categorise OCEAN characteristics, which can then be used by other teams. According to reports, deeper knowledge of personality data to obtain specific information remains a hot research subject[14].

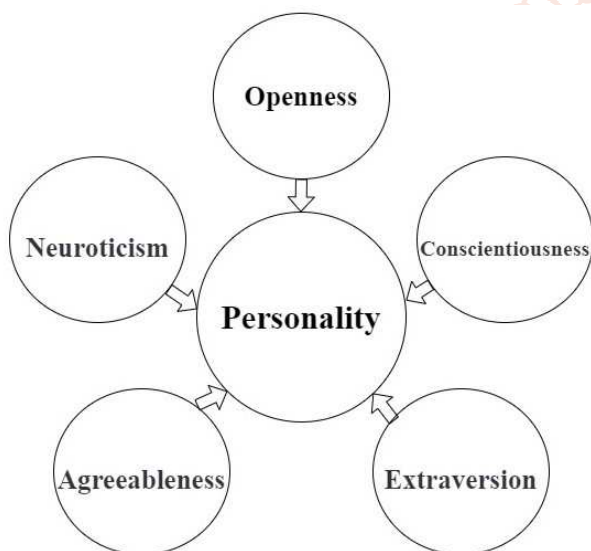


Fig 2: Ocean Model

Personality characteristics such as openness, conscientiousness, extraversion, agreeableness, and neuroticism are assessed using the OCEAN model.

Openness- openness to new experiences demonstrates a level of intellectual curiosity for imagination and adoption of new ideologies, as well as a preference for diversity and novelty. High levels indicate a desire for innovation and a wide range of interests, while low levels indicate a preference for conventionality and familiarity.

Conscientiousness- Conscientious people are organised, tidy, meticulous, and punctual. Low level is thought to be spontaneous and adaptable, but it can also be untrustworthy and sleazy. High level is thought to be obsessive and obstinate.

Extraversion- person who likes to start conversation, enjoys meeting new people, feels energized when around other people.

Agreeableness- person who is genuinely interested in other people, cares for others, and helps those in need

Neuroticism- High level shows anxiety and stress. Low level shows emotionally stable.

VIII. RESULT AND DISCUSSION

Fig 3: Application form

The Form in Fig 3 takes various inputs from user and submit it to prediction model which will predict the personality.

Name : Surya Narayan Sharma
 Age : 21
 Email : Suryasharma1911@gmail.Com
 Mobile_Number : 9851354375
 Skills : Visual, Java, Python, Windows, Communication, Oracle, Mysql, English, Email, Technical, C, C++,
 Company_Names : Oracle,
 Total_Experience : 0
 ['Predicted Personality: Dependable']

Fig 4: Final Result

On result page, all the manipulated information and predicted result will be displayed based on the response received in Fig 3.

IX. CONCLUSION AND FUTURE SCOPE

We introduced an organization-oriented recruiting method in this project to assist the human resource department in short listing the best applicant for a particular job profile. The framework can be used in a variety of business sectors that need expert candidates, reducing the workload on the human resources department. With content and collective filtering, a machine learning methodology was used in data analysis. Furthermore, the predicted personality aid in determining the characteristics of candidates and the HR department makes a fair and reasonable decision.

Further, we can modify the existing system by integrating AI structure to provide significantly improved functionalities. Many more machine learning classification algorithms can be implemented to provide significantly improved functionality [15]. Furthermore, the application's reliability and consistency can be tested and analysed.

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REFERENCES

- [1] Almalis, N. D., et al. *FoDRA—A new content-based job recommendation algorithm for job seeking and recruiting*. in *2015 6th International Conference on Information, Intelligence, Systems and Applications (IISA)*. 2015. IEEE.
- [2] Menon, V. M. and H. Rahulnath. *A novel approach to evaluate and rank candidates in a recruitment process by estimating emotional intelligence through social media data*. in *2016 International Conference on Next Generation Intelligent Systems (ICNGIS)*. 2016. IEEE.
- [3] Ombhase, M., et al., *Automated Personality Classification using Data Mining Techniques*. Pillai Institute of Information Technology, 2017.
- [4] Lai, V., et al. *CareerMapper: An automated resume evaluation tool*. in *2016 IEEE International Conference on Big Data (Big Data)*. 2016. IEEE.
- [5] Kessler, R., et al. *Job offer management: how improve the ranking of candidates*. in *International Symposium on Methodologies for Intelligent Systems*. 2009. Springer.
- [6] De Meo, P., et al., *An XML-based multiagent system for supporting online recruitment services*. IEEE Transactions on Systems, Man, and Cybernetics-Part A: Systems and Humans, 2007. 37(4): p. 464-480.
- [7] Sadr, M. M., *The role of personality traits predicting emotion regulation strategies*. International Academic Journal of Humanities, 2016. 3(4): p. 13-24.
- [8] Squires, J. E., et al., *A protocol for advanced psychometric assessment of surveys*. Nursing research and practice, 2013. 2013.
- [9] Van der Linden, D., J. te Nijenhuis, and A. B. Bakker, *The general factor of personality: A meta-analysis of Big Five intercorrelations and a criterion-related validity study*. Journal of research in personality, 2010. 44(3): p. 315-327.
- [10] Mesurado, B., et al., *EXTROVERSION: NATURE, DEVELOPMENT AND IMPLICATIONS TO PSYCHOLOGICAL HEALTH AND WORK LIFE*. Psychology of Extraversion, 2014: p. 1-13.
- [11] Balabanović, M. and Y. Shoham, *Fab: content-based, collaborative recommendation*. Communications of the ACM, 1997. 40(3): p. 66-72.
- [12] Bergman, L., et al. *International workshop on recommendation and collaboration (recoll 2008)*. in *Proceedings of the 13th international conference on Intelligent user interfaces*. 2008.
- [13] Sarwar, B., et al. *Item-based collaborative filtering recommendation algorithms*. in *Proceedings of the 10th international conference on World Wide Web*. 2001.
- [14] Popkins, N. C., *The five-factor model: Emergence of a taxonomic model for personality psychology*. Great Ideas in Personality, Northwestern University, 1998.
- [15] Liu, H. and L. Yu, *Toward integrating feature selection algorithms for classification and clustering*. IEEE Transactions on knowledge and data engineering, 2005. 17(4): p. 491-502.